

METHOD OF SYNCHRONIZING AN INDEPENDENT DATA DEVICE OF A  
WIRELESS DATA COMMUNICATIONS SYSTEM ON AN INCIDENT  
PULSED SIGNAL OF THE ULTRA WIDE BAND TYPE, AND  
CORRESPONDING INDEPENDENT DATA DEVICE

Abstract of the Disclosure

An incident signal contains a preamble including a training sequence having a series of pulses whose polarity and time shifts are defined by respective polarity code and time-hopping code. A method includes a digital cross-correlation of the received signal with the training sequence. The cross-correlation algebraically sums in accordance with the polarity code windows of the received signal. The starting points of the windows are determined by the time-hopping code. The cross-correlation further includes detecting the end point of the preamble from the result of the digital cross-correlation. When the size of the receiving buffer, i.e., the size of the window is smaller than the number  $N$  of samples of each replica of the training sequence, it is particularly advantageous that the digital cross-correlation be performed iteratively in a block-by-block fashion. The computation of each block is split into  $M$  slices which are computed by algebraically summing windows  $N/M$  samples long.